

THOMSON TECHNICAL INFORMATION



PROSCAN

Product Support • Mail Stop INH 900
P.O. Box 1976 • Indianapolis, IN 46206 -1976

Television Service Bulletin

TV 01-005

DATE: June 18, 2001

MODELS: MM10x/DTV30x

TOPIC: Grid Kick Circuit analysis to prevent CRT phosphor burn.

Symptom: Bright flash at turn on or turn off.

Cause: Grid Kick circuits not fully functional.

Cure: To begin, when CRT phosphor burns are diagnosed on MM/DTV chassis instruments refer to previous bulletins TV00008 and TV00009 and apply if necessary.

The high-end chassis, MM10x and DTV30x, have a circuit called "Grid Kick" whose function is to positively shut off beam current on any loss of scan or chassis shutdown, including normal shutdown. The purpose is to prevent phosphor burn of the CRT screen due to residual beam current being concentrated in a collapsed area of the screen. This generally appears as an extremely bright line or bar, either vertical or horizontal, at or near center screen. The line may be any length from the outer perimeters of the screen to a barely noticeable centrally located line. It may be so intense it will prematurely age the phosphor in that location.

The secondary function of grid kick is to prevent naturally occurring after-glow of the CRT. This condition results when beam current is still available after the focus and scan circuits have shut down. It appears as a "blob" of color on the screen, generally in the center, but it could occur most anywhere on the face of the screen and may be any size.

Grid Kick eliminates beam current at shutdown by switching the G1 (Control Grid) voltage on the CRT from its operating voltage of about +10V to around -200V on any imminent shutdown of scan or chassis. When G1 goes this negative, beam current, no matter what other conditions are present, is severely limited or completely shut off, preventing any possibility of phosphor burn or after-glow.

The first step in troubleshooting phosphor burn incidents is to monitor the G1 voltage during shutdown for the +10V to -200V voltage swing. This should be done PRIOR TO REPLACEMENT OF THE CRT!!! If the grid stays at or around +10V, the grid kick circuit may be inoperative. If it quickly goes negative towards -200V, the circuit is working.

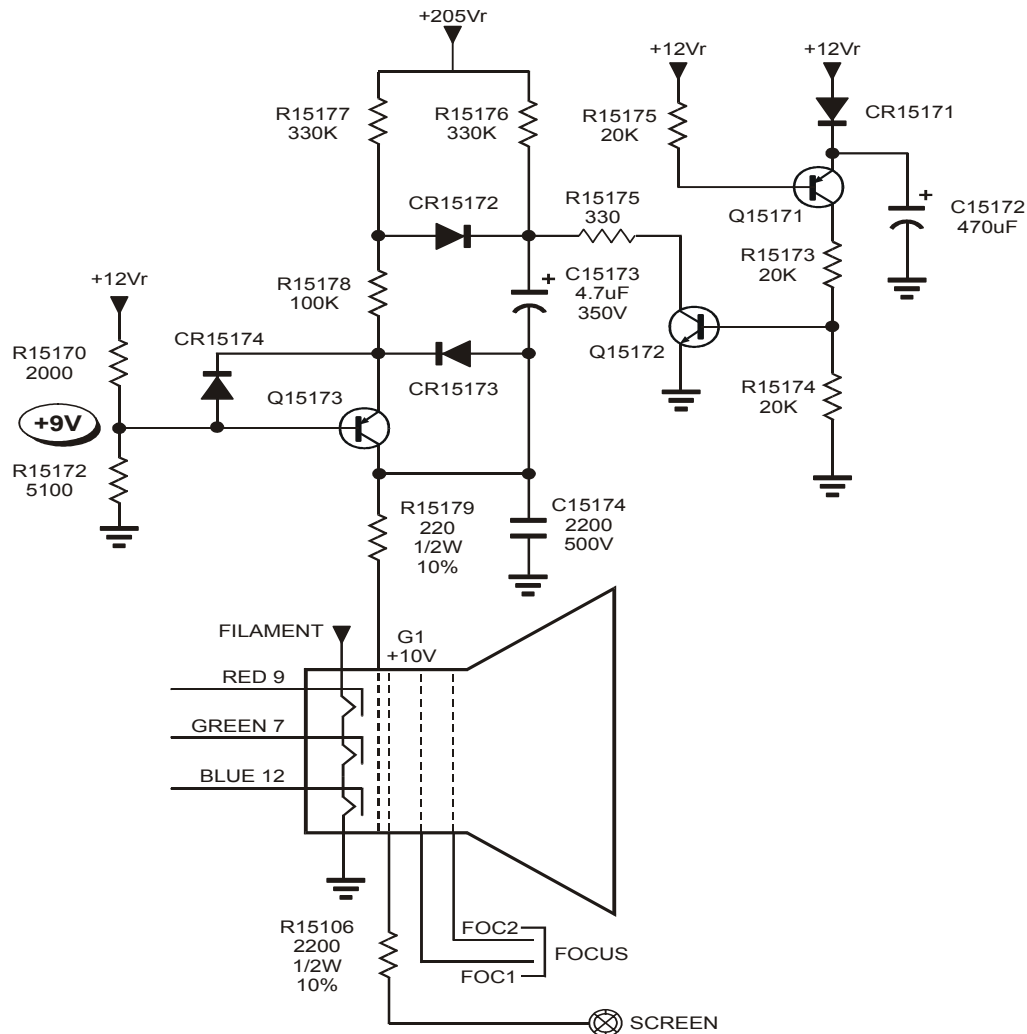
NOTE: Even if grid kick is working, TV00008 and TV00009 may still be required.

Once grid kick has been confirmed operational, and the applicable bulletins performed, the CRT may be replaced.

Product Safety Information

Product Safety information is contained in the appropriate Thomson multimedia Inc. Service Data covering models/chassis referenced herein. All specified Product Safety requirements and testing shall be complied with prior to returning equipment to the customer. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damages and may expose themselves and others to possible injury.

CRT Grid Kick Circuit



Grid Kick Operation

In normal operation, Q15173 is biased on by a voltage derived from the +12Vr supply. Using the +205V supply, Q15173 provides about +10V on the control grid (G1). C15173 charges to about 180V through R15176, CR15173, Q15173, and R15172. Also C15172 charges to +12V through CR15171. Q15171 & Q15172 are biased off.

When the chassis shuts down, (either normally or during failure), base bias is removed from Q15173 at the loss of the +12Vr supply. C15172 maintains a bias voltage for a short time turning on Q15171. Q15171 turns on Q15172 grounding the positive lead of C15173 and draining residual +205V supply voltage. As that voltage is drained, the supply voltage for Q15173 is removed and it shuts off.

The potential on the control grid is now provided by a network consisting of R15179, C15173, R15175 and Q15172 to common. Since the positive lead of C15173 is +180V and *that is now referenced to common*, the negative lead is considered to be -180V and is directly connected to the control grid through R15179. With control grid voltage at or near -180V, any beam current that may be drawn due to residual anode or focus voltage is effectively shut off or severely reduced.

Product Safety Information

Product Safety information is contained in the appropriate Thomson multimedia Inc. Service Data covering models/chassis referenced herein. All specified Product Safety requirements and testing shall be complied with prior to returning equipment to the customer. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damages and may expose themselves and others to possible injury.